

REFRIGERATION EQUIPMENT INVENTORY

Purpose This Meteorology and Air Quality Group (MAQ) procedure provides instruction for Los Alamos National Laboratory (LANL), support services subcontractor, or other subcontractor personnel on performing a refrigeration appliance/equipment inventory at LANL.

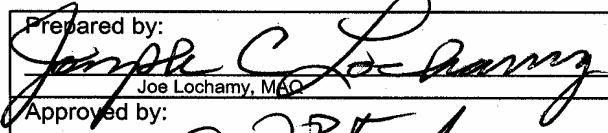
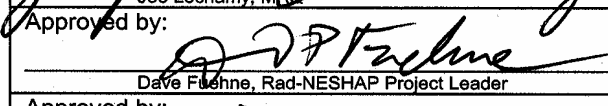
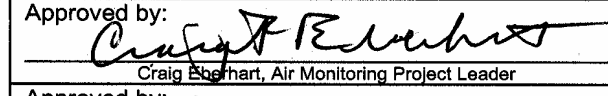
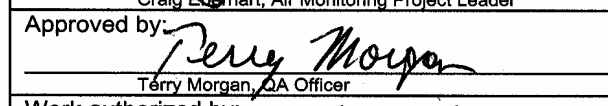
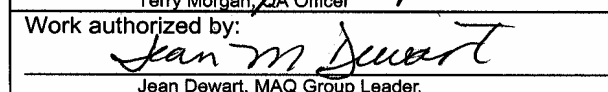
Scope This procedure applies to LANL, support services subcontractor, or other subcontractor personnel who collect information regarding LANL refrigeration appliances/equipment. This procedure may be used to develop or maintain LANL's inventory of refrigeration appliances/equipment.

In this Procedure This procedure addresses the following major topics:

Topic	See Page
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Who Requires Training to this Procedure?	2
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Hazard Control Plan RRES-MAQ personnel do not perform the non-office work steps in this procedure; thus no Hazard Control Plan has been prepared. It is the responsibility of the LANL or the support services subcontractor supervisors of personnel performing this process to ensure all applicable hazards analyses have been performed according to applicable requirements.

Signatures

Prepared by:  Joe Lochamy, MAQ	Date: 2/21/03
Approved by:  Dave Fiehne, Rad-NESHAP Project Leader	Date: 2/11/03
Approved by:  Craig Eberhart, Air Monitoring Project Leader	Date: 2/21/2003
Approved by:  Terry Morgan, QA Officer	Date: 2/24/03
Work authorized by:  Jean Dewart, MAQ Group Leader	Date: 3/4/03

CONTROLLED DOCUMENT

This copy is uncontrolled if no red stamp is present. Users are responsible for ensuring they work to the latest approved revision.

General information about this procedure

Attachments This procedure has the following attachment:

Number	Attachment Title	No. of pages
1	Refrigeration Appliance/Equipment Inventory Form	1

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	6/9/98	New document.
1	5/31/00	Modified Appliance Inventory Form.
2	5/9/01	Modified Appliance/Equipment Inventory Form and changed procedure steps.
3	2/27/02	Modified Appliance/Equipment Inventory Form and added more detail for filling out form.
4	3/20/03	Modifications to text and Appliance/Equipment form.

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- Any person assigned to collect refrigeration appliance/equipment inventory information.

Training method

The training method for this procedure is **classroom** instruction for the support service subcontractor personnel and **read (self-study)** for all other personnel. All training is documented in accordance with the MAQ procedure for training (MAQ-024).

General information, continued

**Acronyms
used in this
procedure**

CFC – Chlorofluorocarbons

CFR – Code of Federal Regulations

EPA – Environmental Protection Agency

FMU- Facility Management Unit

HCFC – Hydrochlorofluorocarbons

**Definitions
specific to this
procedure**

Appliance/equipment: any device which contains and uses a substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer. EPA interprets this definition to include all air-conditioning and refrigeration appliances except those designed and used exclusively for military applications [40 CFR §82 Subpart F].

BTUH: British Thermal Units per Hour

Custom-built: the appliance or any of its critical components cannot be purchased and/or installed without being uniquely designed, fabricated, and/or assembled to satisfy a specific set of industrial process conditions [40 CFR §82 Subpart F].

Full charge: the amount of refrigerant required for normal operating characteristics and conditions of the appliance/equipment as determined by using specified methods in 40 CFR §82.152.

Normally containing a quantity of refrigerant: containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant [40 CFR §82 Subpart F].

Normal operating characteristics or conditions: temperatures, pressures, fluid flows, speeds and other characteristics that would normally be expected for a given process load and ambient condition during operation. Normal operating characteristics and conditions are marked by the absence of atypical conditions affecting the operation of the refrigeration appliance [40 CFR §82 Subpart F].

General information, continued

Definitions, *continued*

Refrigerant circuit: the parts of an appliance that are normally connected to each other (or are separated only by internal valves) and are designed to contain refrigerant [40 CFR §82 Subpart F].

Small appliance/equipment: any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with five (5) pounds or less of refrigerant: refrigerators and freezers designed for home use, room air conditioners (including window air conditioners and packaged terminal air conditioners), packaged terminal heat pumps, dehumidifiers, under-the-counter ice makers, vending machines, and drinking water coolers [40 CFR §82 Subpart F].

References

The following documents are referenced in this procedure:

- RRES-MAQ-024, “Personnel Training”
 - 40 CFR §82 Subpart F
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Note

Actions specified within this procedure, unless preceded with “should” or “may,” are to be considered mandatory guidance (i.e., “shall”).

Performing a refrigeration appliance/equipment inventory

Overview It is the appliance/equipment owner's responsibility to maintain their refrigeration appliance/equipment inventories and provide RRES-MAQ with this information for inclusion into the LANL Title VI compliance database. The appliance/equipment owner can designate anyone, after training to this procedure, to conduct the appliance/equipment inventory. The LANL Appliance/Equipment Inventory Form (Attachment 1) should be used whenever an inventory of any newly installed or existing refrigeration appliance/equipment is conducted. Spreadsheet reports printed from the LANL Title VI compliance database may be used to verify or validate inventory information.

Refrigeration appliance/equipment inventory Use the Refrigeration Appliance/Equipment Inventory Form (Attachment 1) to record appliance/equipment information. An inventory of small appliances/equipment is not required.

Complete **ALL** sections of the form. If a section is not applicable, enter "N/A" or provide additional information as to why the information cannot be provided.

Duty type On the form, indicate the duty type according to the following definitions:

- Comfort cooling – All appliances/equipment except commercial, industrial process refrigeration, and specialized comfort cooling.
- Industrial process – Complex custom-built appliances/equipment used in the chemical, pharmaceutical, petrochemical and manufacturing industries. These appliances/equipment are directly linked to the industrial process. This sector also includes industrial ice machines, appliances/equipment used directly in the generation of electricity, and ice rinks. Where one appliance/equipment is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration appliance/equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.
- Commercial – Refrigeration appliances/equipment utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration appliance/equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the appliance/equipment used to store meat, produce, dairy products, and other perishable goods. All of the appliances/equipment contains large refrigerant charges, typically over 75 pounds.
- Other refrigeration – refrigeration systems that do not fall into comfort, commercial or industrial process duty type. This would include 'specialized comfort cooling' systems such as computer room air conditioners.

Performing a refrigeration appliance/equipment inventory, continued

Forward form to RRES-MAQ **Support services subcontractor employees** follow any applicable internal processes to forward the form to the RRES-MAQ refrigeration contact. **External subcontractors** or **LANL employees** may mail the form to RRES-MAQ at Title VI Program, MS J978, or FAX the form to RRES-MAQ at 665-8858.

Records resulting from this procedure

Records

The following records generated as a result of this procedure are to be submitted **within 5 working days** of completion to **RRES-MAQ**:

- Completed Refrigeration Appliance/Equipment Inventory Form

It is recommended that the owners or their designees file and maintain a copy of the Refrigeration Appliance/Equipment Inventory Form for their records.

Meteorology and Air Quality Group, MAQ

Refrigeration Appliance/ Equipment Inventory Form

This form is from RRES-MAQ-311

Complete ALL sections of the form. If a section is not applicable, enter "N/A" or provide additional information as to why information cannot be provided.

Facility Owner:	Division:	FMU:	Refrigerant Type:
Facility (TA-Bldg-Room):			Method Used to Determine Charge: <input type="checkbox"/> The appliance manufacturer's determination of the correct full charge for the appliance. <input type="checkbox"/> By appropriate calculations based on component sizes, density of refrigerant, volume of piping, and all other relevant considerations. <input type="checkbox"/> By the use of actual measurements of the amount of refrigerant added or evacuated from the appliance (certified refrigerant tech only).
Appliance/Equipment ID: (E.g., CWR-001, RUA-009, etc.)			
Programmatic Equipment? (not owned or operated by FMU)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Circuits and refrigerant charges:	1: lbs: _____ oz: _____	2: lbs: _____ oz: _____	3: lbs: _____ oz: _____
Location: (E.g., basement, computer room, etc.)			
Appliance Type: (E.g., split system, chiller, HVAC, etc.)	Comment:		
Manufacturer:	Date Installed:		By:
Model:	Status: <input type="checkbox"/> Operational <input type="checkbox"/> Non-Operational		
Serial Number:	Required Certification Level: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III		
Duty Type: (see definitions in procedure)	<input type="checkbox"/> Comfort Cooling <input type="checkbox"/> Industrial Process <input type="checkbox"/> Commercial <input type="checkbox"/> Other		
Refrigerant Charge Range:	<input type="checkbox"/> ≥50 lbs <input type="checkbox"/> >5 to 49 lbs <input type="checkbox"/> ≤5 lbs		
Cooling Capacity:	<input type="checkbox"/> BTUH <input type="checkbox"/> Tons		
Lubricant: (E.g., mineral oil, Oil 22, etc.)			
Volts/Phase/Hz:			
General Notes:			
Upgrade and Retrofit Notes:			

Signature _____ Printed name _____ Z-Number _____ Date ____/____/____

Forward completed form to RRES-MAQ Meteorology and Air Quality Group.

Refrigeration Appliance/ Equipment Inventory Form

This form is from RRES-MAQ-311

Complete ALL sections of the form. If a section is not applicable, enter "N/A" or provide additional information as to why information cannot be provided.

Facility Owner: Facility (TA-Bldg-Room): Appliance/Equipment ID: (E.g., CWR-001, RUA-009, etc.) Programmatic Equipment? (not owned or operated by FMU) Circuits and refrigerant charges: Location: (E.g., basement, computer room, etc.) Appliance Type: (E.g., split system, chiller, HVAC, etc.) Manufacturer: Model: Serial Number: Duty Type: (see definitions in procedure) Refrigerant Charge Range: Cooling Capacity: Lubricant: (E.g., mineral oil, Oil 22, etc.) Volts/Phase/Hz:	Division:	FMU:	Refrigerant Type:					
			Method Used to Determine Charge: <input type="checkbox"/> The appliance manufacturer's determination of the correct full charge for the appliance. <input type="checkbox"/> By appropriate calculations based on component sizes, density of refrigerant, volume of piping, and all other relevant considerations. <input type="checkbox"/> By the use of actual measurements of the amount of refrigerant added or evacuated from the appliance (certified refrigerant tech only).					
	<input type="checkbox"/> Yes <input type="checkbox"/> No							
	1: lbs: _____ oz: _____		2: lbs: _____ oz: _____		3: lbs: _____ oz: _____		4: lbs: _____ oz: _____	
					Comment:			
					Date Installed: _____ By: _____			
					Status: <input type="checkbox"/> Operational <input type="checkbox"/> Non-Operational			
					Required Certification Level: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III			
					General Notes:			
				Upgrade and Retrofit Notes:				

Signature _____	Printed name _____	Z-Number _____	Date ____/____/____
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Forward completed form to RRES-MAQ Meteorology and Air Quality Group.